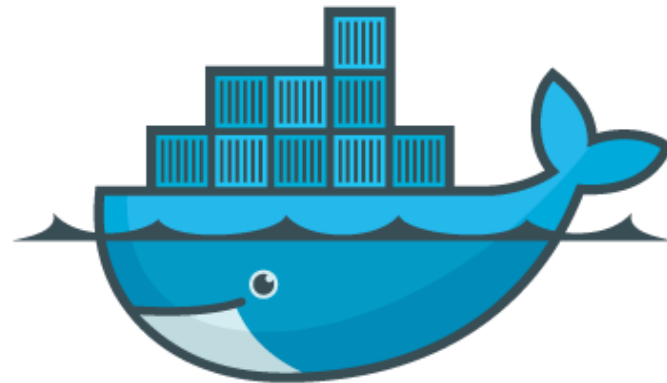# Einführung Docker

LUGO Stammtisch
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Was ist Docker?

docker.io (http://docker.io)

- Eine leichtgewichtige und z.Z. stark "gehypte" Container-Virtualisierung
- Versionierung
- Verteilung

Welches Problem soll gelöst werden?

- Abhängigkeits-Hölle eindämmen

- Distributionsunabhänig arbeiten

- Programme bzw. Subsysteme isolieren

- Modulare Systeme bauen.

- Einfaches Werkzeug

- PaaS, SaaS (Platform/Software as a Service)

- ... DotCloud will Geld verdienen.

- ... und damit das funktioniert nennt es sich dann auch gleich "social".

High-Level-API für Low-Level-Technologie

- LXC (Linux Container)

```
- cgroups (Control groups: Isolation, Limitierungen)
- namespaces (PID, network, UTS, Mount, IPC)
- ...
```

- AUFS (Another UnionFS)

```
- "Gestapeltes" Copy-On-Write-Dateisystem
```

- **keine** Voll-Virtualisierung ala KVM, Virtualbox, XEN, etc.

Begriffe

- Images (Installierte Systeme/Programme)

- Container (Images + Meta-Information)

- Registry (Repositories/persistente Container)

- Index (Registry + Suchen + Nutzer + "social" + $$$)

  SPEC (http://docs.docker.io/reference/api/registry_index_spec/)

Technik

- Server **dockerd** läuft als Root. REST-API

- Client **docker** kommuniziert über Domain-Sockets mit Server, optional auch TCP-Socket+TLS.

Client

```
Usage: docker [OPTIONS] COMMAND [arg...]
 -H=[unix:///var/run/docker.sock]: tcp://host:port to bind/connect to or unix://path/to/socket
to use

A self-sufficient runtime for linux containers.

Commands:
    attach    Attach to a running container
    build     Build a container from a Dockerfile
    commit    Create a new image from a container's changes
    cp        Copy files/folders from the containers filesystem to the host path
    diff      Inspect changes on a container's filesystem
    events    Get real time events from the server
    export    Stream the contents of a container as a tar archive
    history   Show the history of an image
    images    List images
    import    Create a new filesystem image from the contents of a tarball
    info      Display system-wide information
    inspect   Return low-level information on a container
    kill      Kill a running container
    load      Load an image from a tar archive
    login     Register or Login to the docker registry server
```

Client (contd.)

```
    logs      Fetch the logs of a container
    port      Lookup the public-facing port which is NAT-ed to PRIVATE_PORT
    ps        List containers
    pull      Pull an image or a repository from the docker registry server
    push      Push an image or a repository to the docker registry server
    restart   Restart a running container
    rm        Remove one or more containers
    rmi       Remove one or more images
    run       Run a command in a new container
    save      Save an image to a tar archive
    search    Search for an image in the docker index
    start     Start a stopped container
    stop      Stop a running container
    tag       Tag an image into a repository
    top       Lookup the running processes of a container
    version   Show the docker version information
    wait      Block until a container stops, then print its exit code
```

Praxis …

Thank you

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